June 27, 2017

10 CFR 50.73

Docket No. 50-443
SBK-L-17106

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

Seabrook Station
Licensee Event Report (LER) 2017-001-00
Manual Reactor Trip in Response to a Feedwater Isolation due to High Level in Steam Generator 'B'

Enclosed is Licensee Event Report (LER) 2017-001-00. This LER reports an event that occurred at Seabrook Station on April 29, 2017. This event is being reported pursuant to the requirements of 10 CFR 50.73(a)(2)(iv)(A).

Should you require further information regarding this matter, please contact me at (603) 773-7932.

Sincerely,

NextEra Energy Seabrook, LLC

Kenneth Browne
Licensing Manager

cc: D. Dorman, NRC Region I Administrator
J. Poole, NRC Project Manager
P. Cataldo, NRC Senior Resident Inspector

Enclosure to SBK-L-17106

NRC FORM 366 (04-2017) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 03/31/2020

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

(See Page 2 for required number of digits/characters for each block)

(See NUREG-1022, R.3 for instruction and guidance for completing this form http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Seabrook Station	05000 443	1 OF 3

4. TITLE

Manual Reactor Trip in Response to a Feedwater Isolation due to High Level in Steam Generator 'B'

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
										05000
04	29	2017	2017	- 001	- 00	06	28	2017	FACILITY NAME	DOCKET NUMBER
										05000

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check all that apply)*			
	☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
	☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
1	☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
	☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☑ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
10. POWER LEVEL	☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
	☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
	☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(C)	☐ 73.77(a)(1)
12	☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(D)	☐ 73.77(a)(2)(i)
	☐ 20.2203(a)(2)(vi)	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(vii)	☐ 73.77(a)(2)(ii)
		☐ 50.73(a)(2)(i)(C)	☐ OTHER Specify in Abstract below or in NRC Form 366A	

12. LICENSEE CONTACT FOR THIS LER

LICENSEE CONTACT	TELEPHONE NUMBER *(Include Area Code)*
Kenneth Browne, Licensing Manager	(603) 773-7932

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED	15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☑ NO				

ABSTRACT *(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)*

On April 29, 2017 at 18:44, the Reactor was manually tripped by the operators at approximately 12% power in response to a feedwater isolation caused by High Steam Generator (SG) Level on the 'B' SG. The feedwater isolation signal P-14 was automatically actuated at 18:43 when the 'B' SG level reached the setpoint of 90.8% narrow range level. The plant was being started up following the major work performed for Refueling Outage 18. No adverse consequences resulted from this event.

Post-trip investigation revealed that FW-LT-502-V1L (the variable leg pressure isolation for FW-LT-502) had not been restored to the required open position during routine instrument line filling and venting. On April 26, 2017, I&C performed backfilling of the reference legs on multiple steam generator level channels, including FW-LT-502, the 'B' SG wide range level instrument. FW-LT-502-V1L not being restored to the open position caused the 'B' SG wide range indication to respond slowly to level changes resulting in overfeeding the 'B' steam generator. The cause of the event was determined to be failure of the I&C technician to properly implement maintenance fundamentals during the performance of restoration of FW-LT-502. Individual performance was corrected. A contributing cause was determined to be improper characterization of SG level backfill activity as skill-of-the-craft. Planned corrective actions include development of a maintenance procedure to provide specific step-by-step instructions.

LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

(See NUREG-1022, R.3 for instruction and guidance for completing this form http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

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		YEAR	SEQUENTIAL NUMBER	REV NO.
Seabrook Station	05000- 443	2017	- 001	- 00

NARRATIVE

Description of the Event

On April 29, 2017 at 18:44, the Reactor [AC,RCT] was manually tripped by the operators at approximately 12% power in response to a feedwater [SJ] isolation caused by High Steam Generator (SG) Level on the 'B' Steam Generator [AB, SG].

The control room operators were manually controlling SG levels while starting up the unit and were in the process of opening the main feedwater regulating valves. During low power operations, the wide range indication is used to more accurately control SG water levels as SG wide range level indication will lead narrow range level indication as feedwater flow to the steam generator changes.

The feedwater isolation signal P-14 was automatically actuated at 1843 when the 'B' SG level reached the setpoint of 90.8% narrow range level. The P-14 signal closes the main feedwater isolation valves, all feed regulating valves, and trips the main feedwater pumps. The plant was being started up following the major work performed for Refueling Outage 18.

Post-trip investigation revealed that FW-LT-502-V1L (the variable leg pressure isolation for FW-LT-502) had not been restored to the required open position during routine instrument line filling and venting. On April 26, 2017, I&C performed backfilling of the reference legs on multiple steam generator level channels, including FW-LT-502, the 'B' SG wide range level instrument. FW-LT-502-V1L not being restored to the open position caused the 'B' SG wide range indication to respond slowly to level changes.

The operating crew processed through E-0, Reactor Trip or Safety Injection (exited the procedure at Step 4 a RNO) to ES-0.1, Reactor Trip Response (exited at step 14 a RNO) to OS1000.11, Post Trip to Hot Standby.

Cause of the Event

The cause of the event was determined to be failure of the I&C technician to properly implement maintenance fundamentals during the restoration of FW-LT-502. A contributing cause was determined to be improper characterization of SG level backfill activity as skill-of-the-craft.

Analysis of the Event

Feedwater isolation on a high steam generator level prevents continuous addition of excessive feedwater, which could result in carryover of water into the steam lines and excessive cool down of the primary system.

Upon the P-14 actuation, the plant functioned correctly. All automatic functions occurred as designed, in the expected time frame. The Feedwater Isolation function was completed within seven seconds (based on a review of available computer points). The loss of feed flow required the operators to manually actuate a reactor trip at 18:44:26.

Without forward feed flow, SG levels quickly dropped. The emergency feedwater (EFW) actuation signal occurred due to two 'C' SG level instruments dropping below the 20% lo-lo set point. The 'B' EFW pump breaker closed immediately, and the turbine-driven EFW pump began to develop discharge pressure and was at normal operating pressure 11 seconds later.

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NARRATIVE

An EFW actuation also results in a SG blowdown isolation, and this function was performed within five seconds. Due to a lack of decay heat, the RCS temperature cooled to approximately 535 deg. F and a subsequent automatic letdown isolation occurred due to low pressurizer level at 17%. The crew then successfully stabilized the plant in Mode 3 at normal operating pressure and temperature and normal letdown and SG levels were restored. The event posed no actual or potential hazard to public health or safety.

The event resulted in a valid actuation of the reactor protection system and met the reporting criteria of 10 CFR 50.72(b)(2)(iv)(B) and 10 CFR 50.72(b)(3)(iv)(A). A four hour report was made to the NRC at approximately 2119 on April 29, 2017 (event number 52718). Plant operators responded to the plant trip in accordance with approved procedures, and safety systems functioned as expected. No adverse consequences resulted from this event and this incident had no adverse impact on health and safety of the public or the plant and its personnel. This event did not involve a safety system functional failure.

Corrective Actions

Completed Corrective Actions

1. Individual performance was corrected.
2. All similar transmitter valve positions were verified. All valves were found in their correct position.

Planned Corrective Actions

1. Develop and present a case study on this event to I&C technicians that captures the specific details of this event and lessons learned.
2. Develop a maintenance procedure that provides specific step-by-step instructions to perform SG level channel backfilling operations.

Similar Events

There have been no previous licensee event reports at Seabrook for a similar event.

Additional Information

The Energy Industry Identification System (EIIS) codes are included in this LER in the following format: [EIIS system identifier, EIIS component identifier].